

REMARKS

By the present amendment, claims 1 and 9 have been amended to recite that the oxidation catalyst constituting a supply of O₂ is located upstream of the depollution device in the exhaust line, and that during rich mode, oxygen is released from the oxidation catalyst to promote combustion of reducing agents, so as to raise temperature levels at an inlet to the depollution device.

Claim 8 has been amended to replace the expression “from... and/or...” by “from at least one of... and...”

Claims 1-16 are pending in the present application. Claims 1 and 9 are the only independent claims.

I. **Objection to claim 8**

In the Office Action, claim 8 is objected to.

Claim 8 has been amended to replace the expression “from... and/or...” by “from at least one of... and...” as suggested in the Office Action. Accordingly, it is submitted that the rejection should be withdrawn.

II. **Art rejections**

In the Office Action, claims 1, 2, 7-10, 15 and 16 are rejected under 35 U.S.C. 103(a) as obvious over US 6,708,487 to Morimoto et al. (“Morimoto”) in view of US 6,769,245 to Itoh et al. (“Itoh”).

Further, claims 3-4, 6, 11-12, and 14 are rejected under 35 U.S.C. 103(a) as obvious over Morimoto in view of Itoh and further in view of US 20020007629 to Asanuma et al.

Amendment

US Appl. No. **10/595,824**

Attorney Docket No. **PSA0313828**

(“Asanuma”), and claims 5 and 13 are rejected under 35 U.S.C. 103(a) as obvious over Morimoto in view of US 4,655,037 to Rao (“Rao”).

Reconsideration and withdrawal of the rejections is respectfully requested. Itoh provides the OSC function in the particle filter itself and not upstream in an oxidation catalyst.

Specifically, the objective of Itoh is to "boost" combustion of soot particles inside the particulate filter, and in particular, to promote continuous combustion of the soot at lower temperature and without a flame, so as to avoid deposition of soot layers and clogging of the filter. This objective is reached in Itoh by providing additional oxygen stored as “active oxygen release agent 61” in the particulate filter, which promotes the continuous combustion of the soot at low temperature (see Itoh at col. 7, lines 18 to col. 8, line 36). Thus, as explained in Itoh, the oxygen release agent 61 must be provided at the boundary with the particulate matter 62 to perform its combustion-promoting effect (see in particular Itoh at col. 7, line 57 to col. 8, line 2).

In summary, Itoh is mainly concerned about combusting the particulates in the particle filter by oxidation at low temperature without emitting a luminous flame, which requires providing its OSC inside the particle filter.

In contrast, in the presently claimed invention, the oxidation catalyst constituting a supply of O₂ is located upstream of the depollution device in the exhaust line, so that during rich mode, oxygen can be released from the oxidation catalyst to promote combustion of reducing agents, so as to raise temperature levels at an inlet to the depollution device, as recited in present claims 1 and 9.

Amendment
US Appl. No. 10/595,824
Attorney Docket No. PSA0313828

An advantage of the upstream placement of the oxygen supply, as provided in the presently claimed invention, is that it is possible to better manage combustion of exhaust gas hydrocarbons and thus, to improve the exhaust gas temperature at the inlet of the particle filter, as opposed to an oxygen supply within the particle filter for soot combustion, as in Itoh.

In particular, in a regenerating mode where rich and lean modes are alternated, i.e., during "normal" conditions, the engine operates in very lean conditions, during "regeneration at normal conditions", the engine still operates in lean mode, but when the conditions are not favorable (for example, in urban traffic conditions), regeneration occurs in an alternation of rich and lean periods. In such situation, an advantage of the present invention is that it is possible to use the exothermic reaction that occurs when high levels of carbon monoxide and hydrocarbons present in the exhaust gases during rich mode react with the oxygen stored in the OSC (which oxygen was provided and stored during the lean modes), so that the gas entering the particle filter, downstream of the OSC, is at higher temperature. The higher temperature of the exhaust gases at the inlet of the particle filter facilitates initiation of soot combustion in the particle filter, which in turn makes it possible to switch back more quickly to a "medium lean" mode, so as to supply a continuing supply of oxygen for promoting combustion of the soot accumulated in the particle filter, once initiation of the combustion has been made possible due to the higher exhaust gas temperature at the inlet of the particle filter.

The features of the presently claimed invention and their advantages are not taught or suggested in Itoh, which focuses on promoting low-temperature and low-flame combustion by providing OSC within the particle filter for soot combustion, rather than on combustion of

Amendment
US Appl. No. **10/595,824**
Attorney Docket No. **PSA0313828**

hydrocarbons in the exhaust gas upstream of the particle filter to improve temperature levels of the exhaust gas at the inlet of the particle filter. Further, the other references fail to remedy these deficiencies of Itoh. Therefore, the present claims are not obvious over the cited references taken alone or in any combination.

Further, with respect to the dependent claims, it is submitted that the cited references fail to teach or suggest the combined features of each of these claims. Therefore, each of these respective claims is not obvious over the cited references taken alone or in any combination.

In view of the above, it is submitted that the rejections should be withdrawn.

Conclusion

In the event there is, in the Examiner's opinion, any outstanding issue and such issue may be resolved by means of a telephone interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

Amendment
US Appl. No. **10/595,824**
Attorney Docket No. **PSA0313828**

In the event this paper is not considered to be timely filed, the Applicants hereby petition for an appropriate extension of the response period. Please charge the fee for such extension and any other fees which may be required to our Deposit Account No. 502759.

Respectfully submitted,

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